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Community Awareness on Environmental Management through Local Agenda 21 (LA21)

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Abstract

This study evaluates the level of community awareness towards the environment and the level of participation of a community in environmental programs through the Local Agenda 21 (LA21). The programme components include social and environmental aspects. Published studies contend that people are aware of the various environmental problems but lack involvement. This study found that reasons of lack of participation are the lack of time, interest and awareness. Recommendations proposed to encourage more interest and involvement from the community include strengthening the coordination between the Local Authority and the community especially in schools and with other stakeholders in line with the objective of Agenda 21.

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Keywords: Awareness;participation;environmental programs

1. Introduction

Community participation in environmental programs has been proven to enable more effective decision making in protecting the environment and its natural resources. More importantly, this process gives an opportunity to the

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community to have a say over aspects that affect their lives. This process is part of environmental management within the context of Local Agenda 21. Within the environmental scope of the agenda, relevant stakeholders of a community i.e. the residents, Local Authority and the Resident Association are expected to work together in protecting the environment. In this aspect, the Local authority usually initiates environmental programs in the hope that residents or the community would participate and manage the programs in partnership. The first step often taken by a Local Authority is to raise the community's awareness about planned programs by disseminating information through various channels. Medium used include website or flyers distributed to residences, schools, and other stakeholders within a community. However, the lack of awareness among residents of a community about LA 21 programs lead to a lack of participation and is a challenge for the Local Authorities (Zan and Ngah 2012). Local authorities also face other constraints in the process of implementing environmental programs under LA 21. This study describes the level of awareness of a community about the environmental programs under LA21. It also highlights aspects that have an association with the behavior to participate. The findings can help inform the Local Authorities in formulating better strategies relevant to the local context to improve community awareness and more importantly encourage involvement in support of the Local Agenda 21 environmental management process. The case study area for this research is Kota Damansara, Selangor. Kota Damansara has a population of close to 500,000. It is adjacent to another township in the southeast, i.e., Bandar Utama. Sungai Buloh is located to the west and accessibility to the town is via the Lebuhraya Damansara Puchong and the Kota Damansara interchange of the North Klang Valley Expressway (NKVE). The town is under the jurisdiction of the Majlis Bandaraya Petaling Jaya (MBPJ) Local Authority. The township is located in the subdistrict of Sungai Buloh in Petaling, Selangor, Kota Damansara and was previously a forest reserve.

1.1. Local agenda 21

Local Agenda 21 Plan (LA21) is a policy adopted by all the urban Local Authorities in Malaysia. It is a process that aims to involve local people and communities towards a better quality of life for the present and future generations. Local Agenda 21 is a local-government-led, community-wide, and participatory effort to establish a comprehensive action strategy for environmental protection, economic prosperity and community well-being in the local jurisdiction or area. It originates from the Earth Summit held in Rio in 1992 which led to the agreement of an Agenda 21 document detailing a series of strategies within six key elements for action worldwide (SD21 2012). Environmental management is a crucial topic within the LA21 where the Local Authorities should lead, initiate and implement environmental programs with community involvement to address environmental problems SD21 2012). Although the literature indicates various levels of successes for various LA 21 programs the implementations of LA21 in Malaysia are still at an unsatisfactory level but progressing slowly (Kamariah and Khairul 2012; Zan and Ngah 2012). Limited stakeholders' involvement is due to different reasons. Among these is the lack of awareness and knowledge. This study contributes to the literature that assesses the degree of community awareness about environmental matters and their participation in environmental programs implemented under LA 21. In addition, it assesses the reasons for the lack of involvement in environmental programs.

The Ministry of Housing, Urban Well Being and Local Government of Malaysia highlights that the Local Agenda 21 policy (LA21) includes programs where communities, private sectors, and the local authorities can work together to plan and manage their environment towards sustainable development. Within a broader context, the concept of sustainable development parallels the principles of a Quality of Life. The sustainable development concept place emphasis on the well being of the environment through community involvement. The literature states that having awareness about environmental issues may or may not influence an individual to participate actively in environmental program (Steg et al. 2013). Other factors such as social norm, financial resources, and other psychosocial conditions can affect participation in environmental programs (Zsoka et al. 2013). Both industrialized and developing countries demonstrate that a practical approach to resolving urban environmental issues is to develop a city-specific environmental management strategy and action plan (SD21 2012). A strategic approach to environmental planning and management within urban areas can be based on community participation, building community commitment and choosing effective police interventions. The emphasis include mobilizing public support and participation; choosing policy instruments that will change behavior, relieve conflicts, and encourage cooperative arrangements; building local institutional capacity; strengthening urban service delivery, and increasing

local knowledge about the urban environment. Another strategy identified was to raise the awareness within the community by incorporating local perspectives and local knowledge in the formulation of development agenda and encourage stakeholder participation. Community participation in environmental programs is thus a desired outcome in the whole process of moulding more environmentally aware and responsible citizens.

1.2. Environmental awareness

Awareness is defined as being "awake, alert, informed…" (Newhouse 1990). We become aware of our environment by processing a variety of input. To be aware is to be conscious of all the information we are exposed to at the moment.Within the environmental management context, awareness is posited as the initial phase of the learning process towards pro-environmental behaviour and is highly influenced by various internal and external factors (Zsoka et al. 2013). However, various studies also show that having awareness alone does not necessary result in pro-environmental behaviour (Kollmus and Agyeman 2002; Steg et al. 2013). An environmentally responsible citizen and community in addition to having awareness should possess basic understanding of the environment and its problems, feelings of concern for the environment, skills and motivations to solve and eventually, participate in environmental improvement programs (Sengupta et al.2010; Ostrom 2014).

General environmental awareness can be measured through a variety of ways. Several initiatives have been undertaken such as the European Environment Agency Public Awareness Survey (2010) and Public Awareness Indicator Measuring Public Awareness of Biodiversity by International Union for Conservation of Nature (2010). The process of measuring community awareness also involves defining the broad and detail outcomes that are desired and determining which data would describe the extent of outcomes for a particular pro-environmental behaviour (Abe and Didham 2013). An outcome to measure public's environmental awareness level is by assessing their extent of participation or involvement in the environmental programs (Abe and Didham 2013).

2. Methods

2.1. Survey and questionnaire

The study was performed by conducting a cross-sectional type of survey on household residence within the growing urban township of Kota Damansara. A random sampling method was applied to this study, and questionnaires were distributed to different neighbourhood sections comprising of mixed household dwellings. The survey was conducted face to face by several enumerators and involved 430 respondents. The questionnaire comprised of two parts. The first part consisted of questions that asked the respondents age, gender, race profile, current education status, occupation, income and length of residence. The questions to record the demographic profile of the respondents is shown in Table 1**.** The second part comprised of questions to assess their awareness about environmental programs under the Agenda 21, their concern for the environment, their opinions of satisfaction with the local authority's environmental programs and management and the respondents' frequency of involvement in these programs. In many social surveys, the level of awareness of a particular environmental issue could be measured by cross-tabulating the responses that form the predictors of an outcome. In this case, the predictors are the questions related to the demographic profile, attitude, knowledge, and the outcome is about participation. The outcome selected variable questions posed dichotomous "Yes" or "No" answers while the predictor variable questions were posed as either categorically or Likert-type four-point scales (completely dissatisfied to completely satisfied). The questions are raised in Table 2.

2.2. Results and discussion

Table 1 shows the respondents' frequency distribution profile according to sex, age, race, education status, monthly income and length of residence for this study. For this study, the variables in mention are referred to as the respondents' profile. A large portion of the respondents consists of female respondents that are 65.8% compared to 34.2% male respondents. The respondents are of various age groups, most are from the 33-39 years age group

(33.5%), and followed by 26-32 years age group (27%), above 40 years old (22.3%) and 19-25 years group (17.2%). The three major races of this study are the Malays, the Chinese and the Indians. The majority of the respondents are Malays at 93.7% followed by 3.5% Chinese and 2.6% Indians. The analysis results in Table 1 show respondents have different educational backgrounds. Most of the respondents graduate with diplomas or degrees at 69.5% followed by secondary school education at 24.7% followed by 4.2% have primary school level education. The monthly income of the respondent also varies. Those that earn <RM1000 comprise 24.9% of the total respondents followed by those that earn RM2,000-RM2,999 monthly at 24.4%, followed by those that earn RM1,000-RM1,999 at 17.7 and those that earn RM3,000-RM3,999 at 16.7%. Those that earn >RM4, 000 comprise of 16.3% of the total respondents. Subsequently, a Chi-square test of association was conducted to assess if the predictor variables associated with respondents' profile had any association with the outcome variable of interest i.e. the participation level. The null hypothesis is that there is no association. The finding indicated that the predictor variables of ‘income', ‘length of residence' and ‘age' had an association with ‘participation' which was significant and the strength of association was varied from strong to weak.

Table 1. Respondents' profile frequency distribution

Demography	Frequency	Percentage
Sex		
Male	147	34.2
Female	283	65.8
Total	430	100.0
Age		
19-25	74	17.2
26-32	116	27.0
33-39	144	33.5
>40	96	22.3
Race		
Malay	403	93.7
Chinese	15	3.5
Indian	11	2.6
Others	1	2
Education Status		
College Diplomas/Degree	299	69.5
Secondary School	106	24.7
Primary School	18	4.2
Non	6	1.4
Others	1	2
Monthly Income		
<RM1,000	107	24.9
RM1,000-RM1,999	76	17.7
RM2,000-RM2,999	105	24.4
RM3,000-RM3,999	72	16.7
>RM4,000	70	16.3
Length of Residence		

<10 Years	306	71.2
11-15 Years	70	16.3
16-20 Years	20	4.7
21-25 Years	18	4.2
>26 Years	16	3.7

Out of the three variables, the variable ‘income' were strongest in association with the outcome variable (i.e. participation) with Cramer's v = 0.30, significant value ($p<0.05$) followed by ‘length of residence' with Cramer's v = 0.231, significant value ($p<0.05$) and Age with Cramer's v = 0.1666 with significant value ($p<0.05$). However in this study, ‘education' and ‘gender' did not indicate having any significant association or relationship with the outcome variable of ‘participation'. In other words, there is no significant difference in the level of education or the gender of a respondent to affect the outcome of participation. The findings are reported in Table 2.

Table 2. Chi-square tests of association for respondents profile and participation

Variable	Pearson Chi-Square Value	df	Sig. (2-sided)	Cramer’s v Value	Approx. Sig.
Income	22.866	3	0.000*	0.231	0.000
Length of residence	39.055	3	0.000*	0.301	0.000
Age	11.864	3	0.008*	0.166	0.008
Education	2.784	3	0.426	0.80	0.426
Gender	0.382	1	0.526	0.03	0.526

In assessing the awareness level of the respondents about environmental matters, a frequency and cross-tabulation were conducted. Figure 1 report that the majority of the respondents does not know and are not aware of LA 21 environmental programs implemented by the local Authority or MBPJ. Only 15.1% said "Yes" to know about the programs and 84.9% said "No." Similarly, only 22.1% of the respondents said, "Yes" to participate in the environmental programs while the majority of the respondents (77.9%) said "No" (Figure 1). Figure 2 reports that in each program, the majority of respondents did not participate while Figure 3 reports the reasons of non participation.

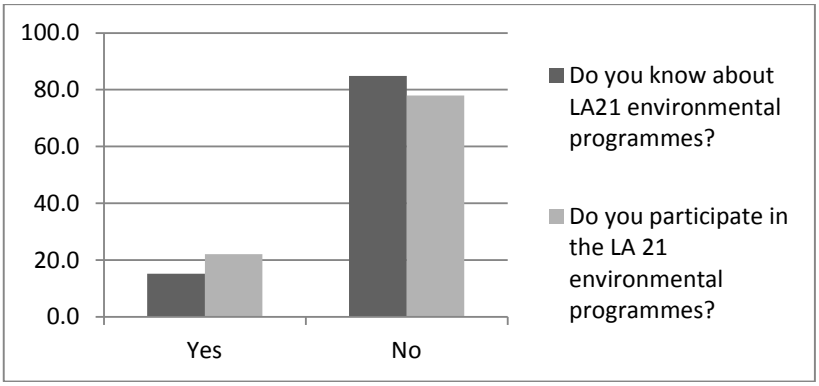

Fig. 1. Knowledge of LA 21and participation in environmental programs

In assessing if their knowledge of LA21 and whether or not they participate in environmental programs had any association, a cross-tabulation of responses was conducted. In addition, the researchers wanted to assess how strong this relationship was. The data indicate that 25 of the 65 who said they have knowledge about LA21 participate in the LA21 environmental program and 70 of the 365 who did not know about LA21 also participate in environmental programs. The Pearson chi-square test conducted revealed that the critical value of $\chi 2 = 11.920$ with 1 degrees of

freedom is significant (p=0.05), and thus the null hypothesis can be rejected. The alternative hypothesis, in this case, is accepted and that there is a significant association between the two variables of "Knowledge" and "Participation". The phi measure value tests the strength of association between the two variables and a value of 0.166 and significance level ($p<0.05$) indicates that the relationship between the two variables is moderate to strong and significant (Pallant 2013). Table 3 reports this assessment.

Table 3. Knowledge about LA21 and participation in LA 21 environmental

		Do you participate in environmental_programmes?		Total
Are you aware of LA 21 (environment programmes		Yes	No	
	Yes	25 (38.5%)	40 (61.25%)	65
	No	70(19.2%)	295(80.8%)	365
Total		95(22.1%)	335(77.9%)	430 (100%)

Pearson Chi-square test of association Critical value of $\chi 2 = 11.920$ with 1 degrees of freedom is significant ($p<0.05$) and the null hypothesis can be rejected. Thus, there is an association between knowledge about program and participation

In evaluating the satisfaction level of respondents about various aspects of environment such as the general conditions, Local Authority's environmental management and current programs implemented, the findings indicate that 65.8% of the respondents were satisfied with the environmental conditions, 67.2% of the respondents were satisfied with the environmental management of the local authority and the environmental programs implemented in their area (Figure 4). However, does this situation explain that having satisfaction give an effect (or is associated) with the respondents participation in environmental programs? Subsequently, the test of association was conducted to provide some insight into this query.

The study conducted a Pearson chi-square test of association for attitude based variables with participation as the outcome variable. Attitudes can report feelings of concern for the environment.

Questions such as "How concern are you about the environment" (referred to as "Attitude"), "How satisfied are you with the Local Authority's environmental management"(Satisfaction with Local Authority' Environmental Management /SELA), "How satisfied are you with the current environmental programs"(Satisfaction with Environmental Programs/SEP) and "How satisfied are you with the environmental conditions" (Satisfaction with Environmental Condition/SEC) were cross-tabulated with the outcome variable. Overall, the results indicated that all four predictor variables were significantly associated with the outcome variable. Table 4 reports the results of the tests of relationship between "Participation" with "Attitude", SELA", "SEP" and "SEC" and indicates the strength of their association. Out of the four variables, "Attitude", had the strongest association with "Participation" followed by "Satisfaction with the environmental conditions (SEC"), Satisfaction with environmental programmes (SEP) and finally, "Satisfaction with Local Authority/ (SELA)".

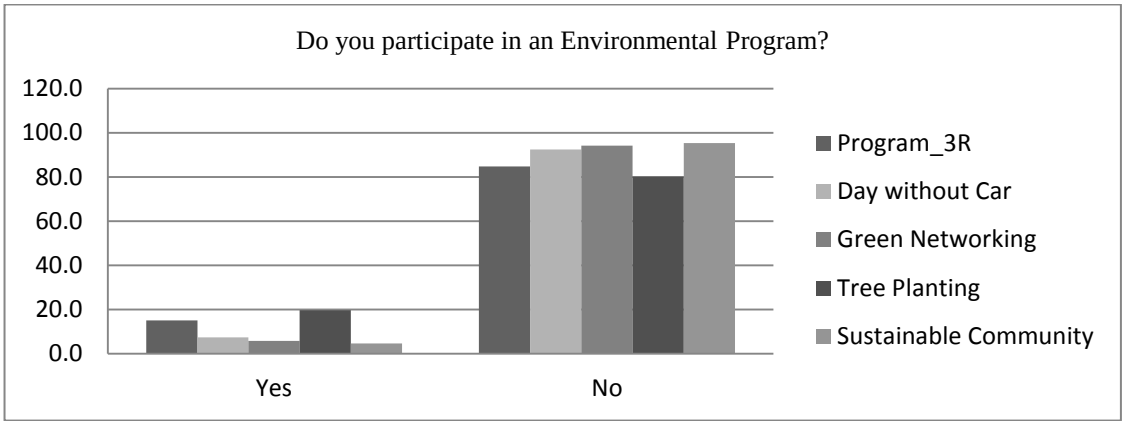

Fig. 2. Participation in a particular environmental program

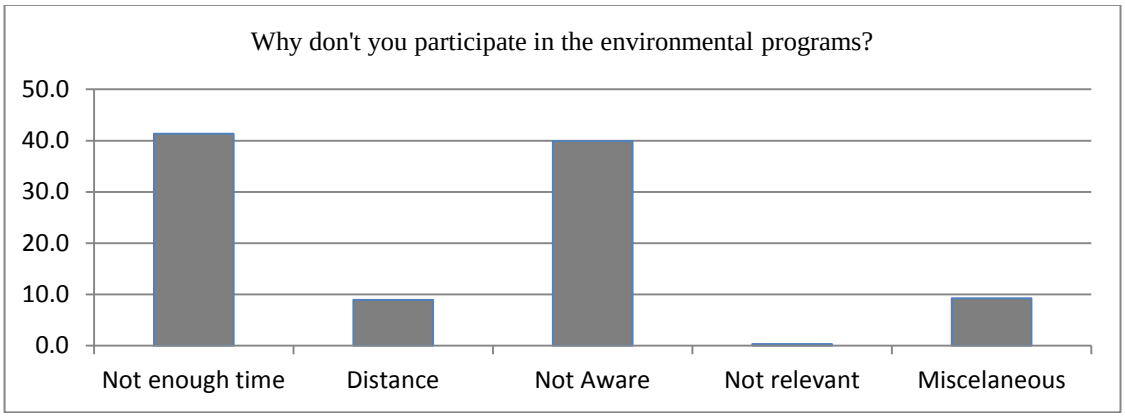

Fig. 3. Reasons to non participation in LA21 environmental programs

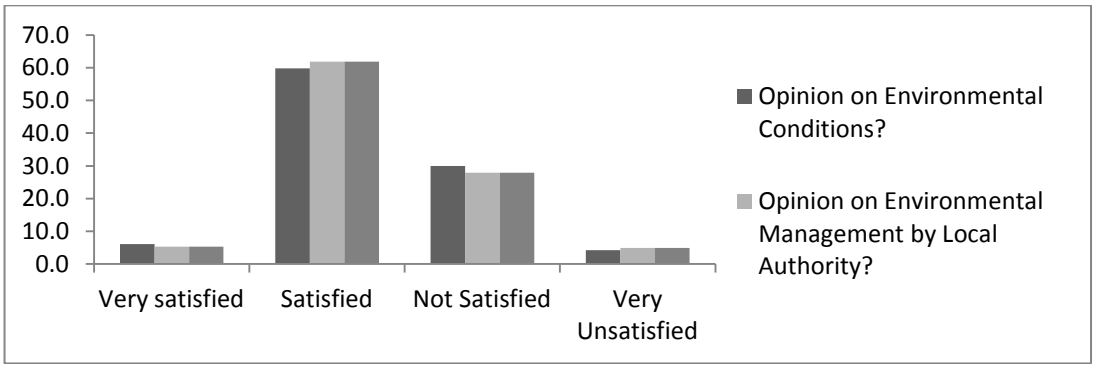

Fig. 4. Respondents opinion on environmental conditions, environmental management by the Local Authority and current environmental programs

Table 4. Test of association for attitude, "SELA", "SEP" and "participation"

Variable	Pearson Chi-Square Value	df	Sig. (2-sided)	Cramer's v Value	Approx. Sig.
Attitude	34.623	3	0.05	0.284	0.05
SEC	18.547	2	0.05	0.208	0.05
SEP	13.771	3	0.05	0.179	0.05
SELA	12.812	3	0.05	0.173	0.05

The Pearson chi-square test conducted revealed that for "Attitude", the critical value of $\chi 2 = 34.623$ with 3 degrees of freedom is significant (p=0.05) and thus, the null hypothesis can be rejected. The Cramer's v tests the strength of association between "Attitude" and "Participation" has a value of 0.284 and significance level ($p<0.05$) indicates that the relationship between the two variables is moderate to strong and significant. This association indicates that respondents' attitude can effect towards their participation behaviour.

The test of association conducted for "SEC" obtained the critical value of $\chi 2 = 18.547$ with 3 degrees of freedom and is significant. The Cramer's v test between variable "SEC" and "Participation" has a value of 0.208 and significance level ($p<0.05$) indicates that the relationship between the two variables is moderate to strong and significant. This association suggests that feelings of satisfaction with current environmental conditions do give effect to whether people participate in environmental programs or not.

For the variables of "SEP" and "Participation", the critical value of $\chi 2 = 13.771$ with 3 degrees of freedom and is significant (p=0.05). Thus, the null hypothesis can be rejected, and we accept the alternate hypothesis that there is an association between the two variables. The Cramer's v test between variable "SEP" and "Participation" has a value of 0.179 and significance level ($p<0.05$) indicates that the relationship between the two variables is moderate to strong and significant. This association suggests that feelings of satisfaction with current environmental programs do give effect to whether people participate in environmental programs or otherwise.

The chi-square test conducted for "SELA" reported the critical value of $\chi 2 = 12.812$ with 3 degrees of freedom and is significant (p=0.05) and the null hypothesis is rejected. In other words, there is a significant association between the two variables. The Cramer's v test between variable "SELA" and "Participation" has a value of 0.173 and significance level ($p<0.05$) indicates that the relationship between the two variables is moderate and significant. This association gives an indication that the level of satisfaction towards the local authorities does give effect to whether people participate or not.

3. Conclusion

In conclusion, there is a strong to moderate association between community awareness of the environmental programs planned under LA21 and participation in this study. Community awareness can be interpreted as low based on the low number of participants in programs (22.10%) and low number of respondents who had knowledge of LA21 environmental programs (84.90%). The majority of respondents are unaware of the LA21 environmental programs. However, a majority of the respondents (95.10%) reported having a concern for the environment. 59.50% of the respondents quoted waste management followed by 18.60% air pollution as the major environmental concerns in their community. A slight majority (65.8%) were satisfied with the current environmental conditions and environmental programs in their community. Only about one-fifth of the respondents (22.1%) participated in some environmental program within their community. The non-participants (77.9%) reported that lack of time and being unaware of the programs are the main reasons for, not participating. In order to gain some understanding of this lack of participation, the study also assessed associations between various variables with the variable participation in environmental program. The strongest variables that had an association with participation were having a higher income, longer duration of residence and age. Those respondents who reported participating had a more positive attitude and sense of concern and satisfaction with the current environmental conditions and programs and the local authority's environmental program management. 43.30% of the respondents suggested more encouragement and incentive to encourage participation while 30.9% reported that there should be more awareness campaigns by the Local Authority followed by 23.30% said that there should be environmental programs. More than a third of the

respondents (33.0%) suggested that all schools should be the main target for LA21 environmental programs implementation followed by 31.20% promotion of LA 21 environmental programs from door to door. 27.20% of the respondents suggested that local voluntary organization such as NGO or resident associations should recruit more members in support of the environment while 8.6% suggested other forms of media such as SMS or through emails.

The level of participation in an environmental program can be an indicator for measuring the level of awareness of the environment. Public awareness may become the basis of capacity to participate in pro-environmental behaviour and is considered the first step to a change towards acting pro environmentally. However, having awareness alone does not ensure an individual will participate in environmental behaviour. Further studies are required to assess the different factors that influence the outcome of action. Different segments of the community may be encouraged through different strategies (Juneman and Pane 2013; Altin et al. 2014) and essentially, the community has to be informed about the programs (Kamariah et al. 2014; Laurence 2011). Providing better infrastructure or incentives that encourage social norms may prove to be more significant in encouraging pro-environmental behaviour and collective action (Kamaruddin 2010). In fact, Steg et al. (2014) contends that in many cases, people may not be aware of what factors influence their environmental behaviour and suggest that communities need to be clear about their goals with respect to the environment. It is also beneficial for Local Authorities to support the initiative of competent facilitators that are pro-environmental (Kamaruddin et al. 2013).

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